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COTTON GINNING INFORMATION FOR FARMERS.

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SEPARATION OF SEED FOR PLANTING.

One of the greatest difficulties in the production of cotton of uniform fiber is the inability of the planter to maintain the purity of the seed of that particular variety which he prefers. He makes a practice of buying new seed every two or three years, the contention being that seed will "run out" in this length of time; that is, his seed becomes so badly mixed, either at the gin or by cross breeding, that it no longer represents the variety originally planted. In the very nature of things the different varieties of cotton become mixed if grown in adjacent localities. This is caused by the interchange of pollen between different varieties of cotton. Pure seed

NOTE.—This bulletin contains a general discussion of those mechanical processes of ginning which are of importance to the farmer. Only saw gins are treated, inasmuch as only a small part of the cotton crop is ginned by any other method. The purpose is to bring to the attention of cotton producers, especially in those communities where cooperative handling and marketing of cotton is possible, the many benefits to be obtained by keeping the seed pure and eliminating a portion of the losses due to indifferent preparation of cotton for the market. The publication should be of interest to cotton merchants, factors, ginner, and others of the cotton trade.

for planting purposes may be maintained by a proper system of seed selection,¹ which applies to all varieties of cotton.

It is a good plan to pick planting seed from the lint by hand, in order that it may not become mixed with seed from cotton of another variety, or if so much seed is needed that this is impracticable the cotton may be ginned in the regular way with good results if the ginner will first take the precaution to clean out thoroughly all the gin heads and let the machinery run a few minutes to make sure that all the seed and seed cotton from preceding bales have been removed. Particular care should be exerted to the end that the seed bin and trough are entirely free of any seed that may have been left from some other variety of cotton. In some gins the seed is not allowed to go into the seed bin, but by means of a board or piece of metal is conducted to the floor of the gin house, which should be swept clean before beginning the operation. This is by far the safer method. Some improved gins have a hinged metal chute which may be let down so that the seed discharged from the breasts will fall onto the floor instead of into the seed trough.

If a large amount of selected seed is to be saved, the best results are obtained either by ginning very early in the season or after the rush of the season is over, when the ginner can take greater care in exercising such precautions as will maintain the purity of the seed. It is practically impossible to maintain the purity without the co-operation of the ginner, and it is unreasonable to ask him to delay his regular ginning work and keep other patrons waiting. Many ginners designate a certain day each week or certain days at the end of the season for ginning for planting seed.

This care is necessary for the following reasons:² In the usual process of ginning, the seed roll, containing about 30 to 35 pounds of seed, is originally made from the seed of the first bale ginned. This seed roll fills the gin head, but the seed in it changes constantly and gradually. Thus each customer, after the first, receives the right amount of seed, when he catches it in the seed bin, but the amount is not made up entirely of the seed from his own cotton, some of that being left in the seed roll, to make up for that which he received from the roll as originally formed. For any purpose other than for planting this is no detriment, but it can readily be seen that seed obtained in this way may be composed of several varieties.

A most effective method of obviating this very serious defect in present methods can be used to advantage if each community will

¹ Kearney, Thomas H. Seed Selection of Egyptian Cotton. U. S. Dept. of Agriculture, Bulletin No. 38, 1913.

² Saunders, D. A., and Cardon, P. V. Custom Ginning as a Factor in Cottonseed Deterioration. U. S. Dept. of Agriculture, Bulletin No. 288, 1915.

determine by experiment¹ the particular variety of cotton which is best suited to its section and agree to plant this variety only. With the present practices in ginning and the common custom of planting different varieties indiscriminately in the same locality, it is only a question of time when all varieties, no matter how well selected, will descend to one mongrel type.

GINNER'S CERTIFICATE FOR THE FARMER.

By driving a wagonload of seed or unginced cotton upon the scales, the gross weight may be determined. When the cotton has been ginned, the empty wagon is weighed. This second weight represents the tare, which is subtracted from the gross weight; the remainder represents the weight of the seed cotton with its impurities of dirt and trash, thus:

	Pounds.
Gross (weight of loaded wagon)-----	3, 020
Tare (weight of empty wagon)-----	1, 600
Net (weight of seed cotton)-----	1, 420

Thus the customer can compare the ginner's weight of seed cotton with his original weight—that is, if he has weighed the cotton into his wagon. He can also calculate how the weight of his bale of cotton compares with the weight based on his estimate of the correct percentage of resulting lint. This percentage varies in different sections, as well as in different varieties of cotton. In sections where the staple is short, when the whole weight of the bale, including bagging and ties, is included, the percentage often runs as high as 36 to 38 per cent and occasionally as high as 45 per cent. It is frequently said that cotton should “third itself”; in other words, 1,500 pounds of seed cotton should make a 500-pound bale. If the cotton “thirds itself,” it is a fair average, although it must be borne in mind that climatic conditions, variety, soil, and amount and quality of fertilizers used are among the factors which influence the percentage.

Herewith is given a copy of a weight certificate which is recommended, as it gives all details from the time the wagon is first weighed until cotton and seed are ready for the market:

Driver-----	Date-----
On. Off.	
JOHN DOE, Ginner.	
Owner-----	Seed cotton.
Seed disposition-----	Gross-----
Weight of seed-----	Tare-----
Bale mark and No.-----	Net-----
Bale weight-----	Weigher-----

Name of driver should be written on line marked “Driver.”

¹ “Distribution of Cotton Seed in 1915.” U. S. Dept. of Agriculture, Bureau of Plant Industry, Document No. 1166.

The words "On" and "Off" are used to show whether the driver was on or off his wagon when the load was weighed. If on, the word "Off" should be crossed out; if off, the word "On" should be crossed out. A weigher can not be expected to remember whether the driver was on or off the wagon when the load was weighed, and it is necessary to weigh the wagon the same way the second time in order to have the correct weight of seed cotton.

If seed is hauled from the gin by the customer the word "Out" should be written in the "Seed disposition" line. If seed is stored with ginner, "In" or "Stored" should be used. If sold to ginner, this space should be marked "Sold," followed by number of his check given in payment.

The line marked "Gross" shows the weight of the wagon and load. The line marked "Tare" shows the weight of the wagon after unloading the seed cotton. Subtracting the tare from the gross, the net weight of seed cotton is given, which should be inserted on the line marked "Net."

All other lines should be filled in as indicated.

The original of this certificate is made with perforated edge that it may be torn out and given to the customer. A duplicate certificate of a different color should be left in the book. Carbon sheets should be used in order that an exact copy may be kept by the ginner for his records, as an error is likely to occur if the duplicate is made in some other way. The use of carbon sheets will save labor and possible misunderstandings.

If the customer returns for the seed or sells it, after it has been left in storage, the ginner should make proper notation on the original and duplicate certificates.

USUAL GINNING PROCESS.

In the usual ginning process the seed cotton is fed into chutes by the elevator system, which takes the cotton out of the wagon by means of a suction fan. The cotton drops through the chute into the feeder, and is then fed evenly to the gin saws, where the lint is separated from the seed.

The seed slides down to a trough from which, by a screw conveyor, it is carried to the seed pipe, thence to the seed bin or seed house. The transfer through the seed pipe to bin or seed house is effected either by a revolving screw conveyor or by the exhaust from the fan which furnishes the suction for unloading the cotton. When the screw conveyor is used, in the more up-to-date plants, the bottom of the seed trough is made of perforated metal which permits sand and dirt to be sifted out, thus improving the quality of the seed. If the customer desires to retain his seed, he asks to have it conveyed into the seed bin, from which he takes it after his bale is ginned. When he desires to sell or store it, it is conveyed into the seed house. The

seed bin is situated in the gin yard between the ginhouse and the seed house, as with this arrangement the seed may be stopped at the seed bin or conveyed to the seed house by the use of valves in the seed pipe. When the seed is sold to the ginner or stored with him, it is not usually weighed, but a certain number of pounds are allowed. This amount usually ranges from 60 to 66 pounds per 100 pounds of seed cotton, the allowance being based on the average quantity of seed to 100 pounds of seed cotton in a given locality. The system of average percentages is, at best, inaccurate and unsatisfactory. An automatic weighing device is manufactured which can be set to weigh any small amount of seed, the weight of a bushel being the usual amount. An automatic trip lets the seed into the seed pipe and registers the quantity on an indicator, which makes it possible for the ginner to pay each customer for his exact weight of seed. The trips of this indicator are carried forward automatically to another indicator which keeps the total number of trips through the season, and in this way affords the ginner an easy method of knowing the amount of seed he has on hand. The first indicator is reset for each bale.

The lint cotton is passed from the gin saws through the lint flue to the condenser, which gives it a final cleaning, smooths it out into a bat or sheet, and drops it in regular layers into the press box,¹ where it is pressed, wrapped, and tied, the size of the bale being usually 27 by 54 by 45 inches.² The bale is weighed, a certificate being given to each customer, and it is then ready for market.

ONE AND TWO STORY GINS.

Gins as commonly built are either of one or two stories. There are some advantages to each plan. Without doubt a gin can be operated on the ground floor with less vibration, and therefore with less wear, tear, and friction; however, with proper care and material a two-story gin can be built that will not vibrate to a great extent. Low fire risk, and therefore cheaper insurance, is one of the chief advantages of one-story gins with an earth or concrete floor. (See figs. 1 and 2.)

GENERAL DISCUSSION OF THE PRINCIPAL PARTS OF GIN MACHINERY.

ELEVATORS.

There are two distinct types of elevators used on modern gins, the pneumatic elevator and the belt-distributor elevator.

The pneumatic elevator consists of two wooden or metallic pipes passing over a single gin or battery of gins. (See fig. 3.) One is

¹ A double press box is the one in most general use. When a bale is ginned into it the press box is revolved through an arc of 180° to be pressed.

² Twenty-seven by 54 inches is the standard size of the press box. The depth depends upon the density to which the bale is pressed, 45 inches being the usual dimension.

the air pipe, the other the cotton pipe. These pipes open at the bottom into chutes over the feeders. The cotton passage is separated from the air passage by a heavy wire screen. The suction in the air

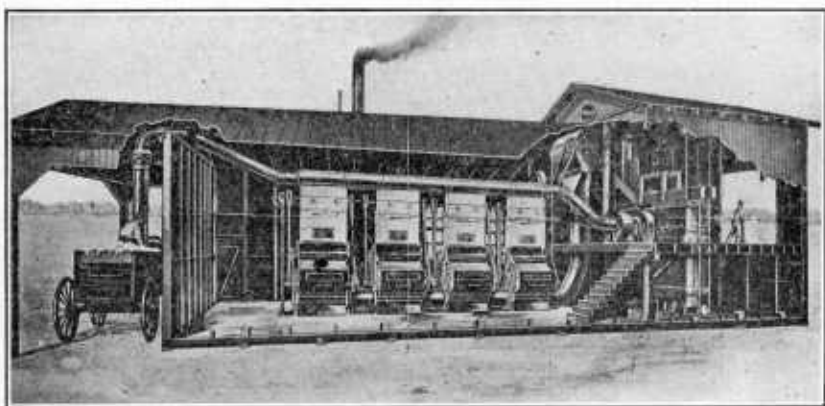


FIG. 1.—One-story gin, showing battery of four gin stands on the ground floor.

pipe causes the seed cotton to pass along the cotton pipe and drop into the chutes. When the chutes above the feeder become full, the cotton ceases to pass through the cotton pipe until a portion of the seed cotton is ginned out. When the air pressure is removed at

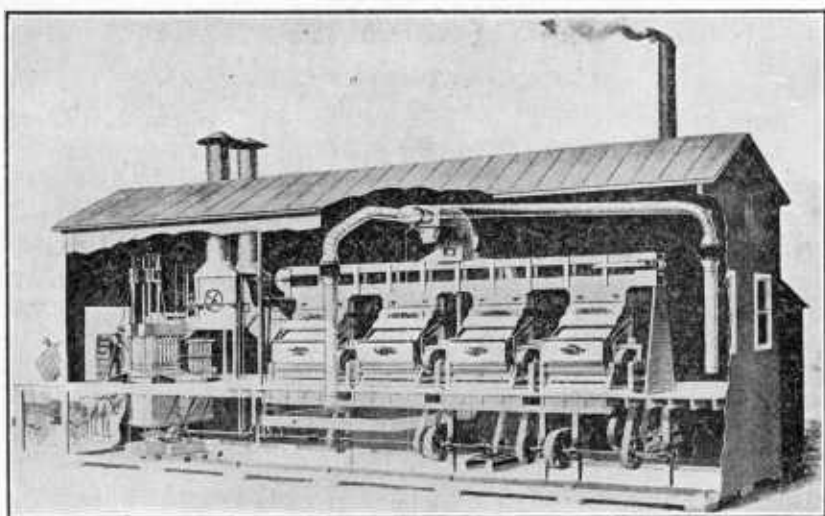


FIG. 2.—Two-story gin, with battery of four gin stands on second floor.

regular intervals, the cotton is dropped to the feeders, then to the gin saws. The method of removing the air pressure varies with different makes of elevators. (Fig. 3.)

The belt-distributor elevator consists of what is called a separator placed over a belt box through which passes a belt with projections or fingers placed thereon. (See fig. 4.) A suction fan connected

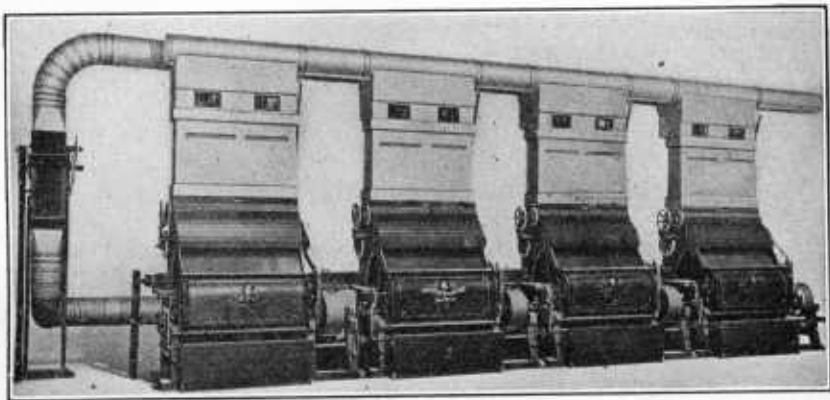


FIG. 3.—Pneumatic elevator over a battery of four gin stands.

with the separator draws the cotton from the wagon into the separator, where it is thrown against a heavy wire screen, after which it is carried to the feeders by the belt distributor. When the feeders

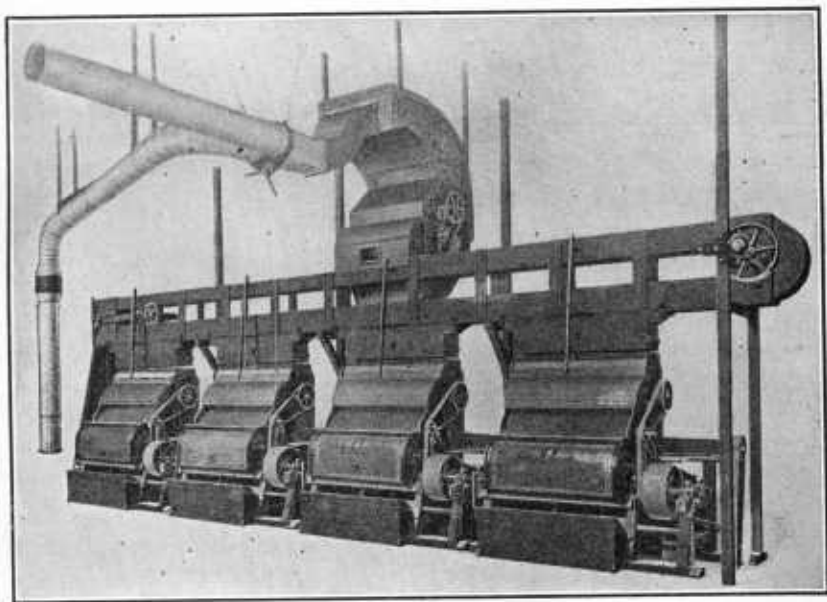


FIG. 4.—Belt-distributor elevator over a battery of four gin stands.

are filled, the surplus cotton is carried by the belt distributor to the end of the belt box and dropped onto the floor. This surplus cotton is called the "overflow."

A large portion of the cotton going through the belt-distributor elevator goes to the overflow, and when the cotton on the wagon is exhausted the suction is switched and the cotton from the overflow again passes through the separator and belt distributor. In this way it receives a double beating and cleaning before it goes to the feeder. It is a noticeable fact that the portion of the cotton which goes to the overflow and is again passed through the cleaning system is always of a better grade than that which passes through the machinery only one time. When ginning his own cotton, a ginner frequently passes the entire load through to the overflow and then rehandles the seed cotton before ginning. There is no doubt that it is

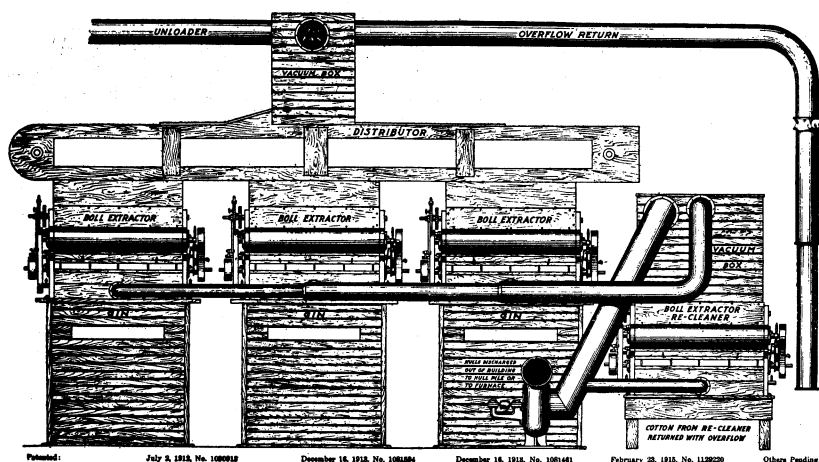


FIG. 5.—Cleaning process attached to gins, showing boll extractors acting as feeders.

profitable to do this, as the quality is thereby improved to some extent.

PREPARATORY CLEANING PROCESSES.

There are a number of bolly machines, boll extractors, boll breakers, beaters, cleaners, etc., which have for their object the separating of boll hulls, trash, and other foreign matter from the seed cotton before it reaches the gin saws. Some of these machines are separate devices through which the seed cotton is passed before reaching the feeders; others are built as a part of a cleaner feeder; and still others are combined with the separator. Frequently one gin plant may make use of several of these devices, passing the seed cotton through each in turn. Figures 5, 6, 7, 8, and 8A illustrate a number of the different kinds of machines.

These devices greatly improve the preparation of both cotton and cotton seed for the market. The boll hulls thus removed may be used for fuel, thus sometimes effecting a considerable saving.

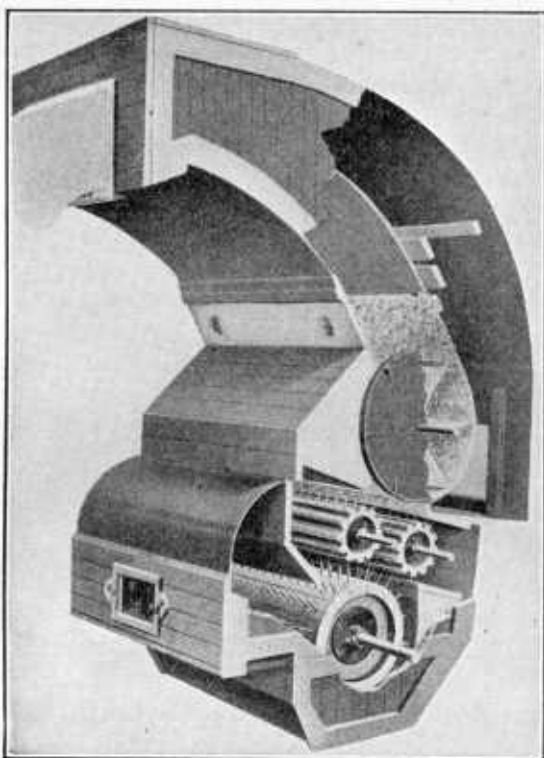


FIG. 6.—Combined cleaner and separator.

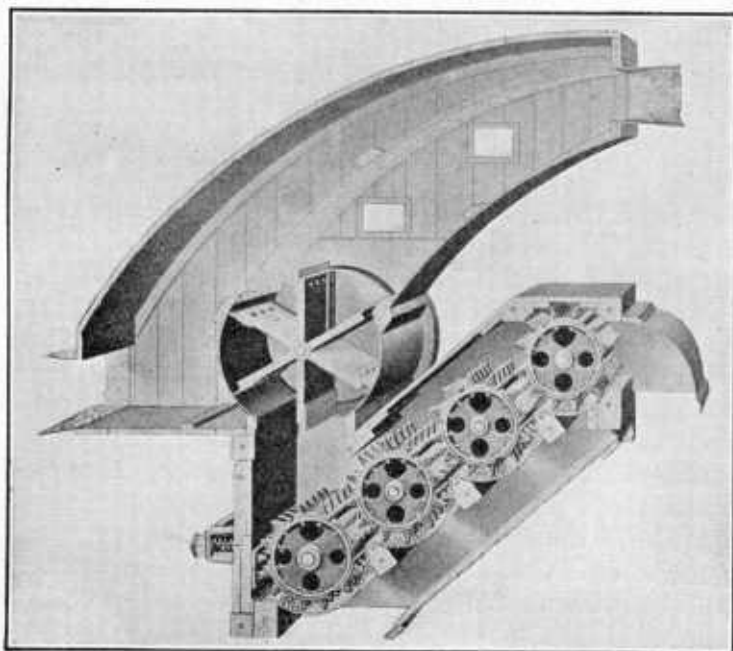


FIG. 7.—Combined cleaner and separator.

CLEANER FEEDERS.

Cleaner feeders are sold by every firm which manufactures cotton gins, the different makes being practically the same in mechanical principle. Cleaner feeders should be used by all ginners in preference to plain feeders without cleaner attachment, as by their use the quality of the cotton is improved materially. In the cleaner feeder the cotton passes through fluted rollers, and over a rapidly revolving picker roller which is studded with spikes, thus beating the cotton vigorously and dragging it across a heavy wire screen. The greater portion of the dirt and dust drops through this screen and is carried out by a screw conveyor. Figures 9 and 10 show working parts of one style of cleaner feeder, and figure 11 a cross section of another style.

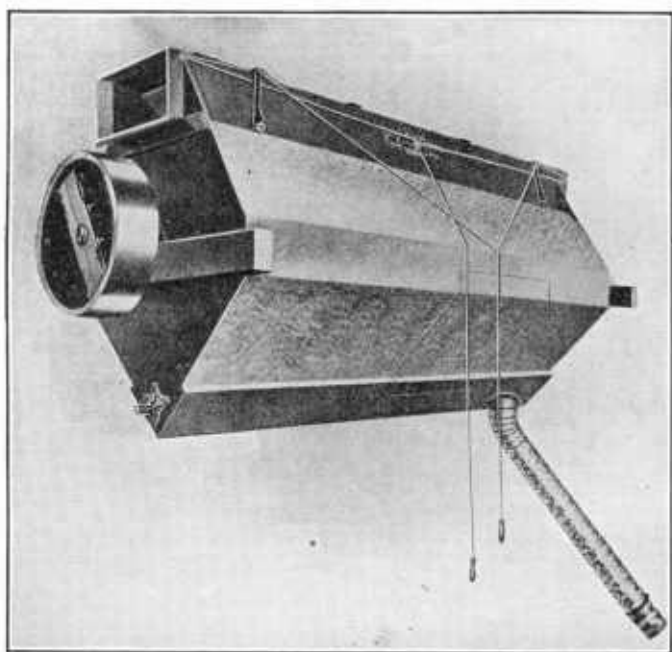
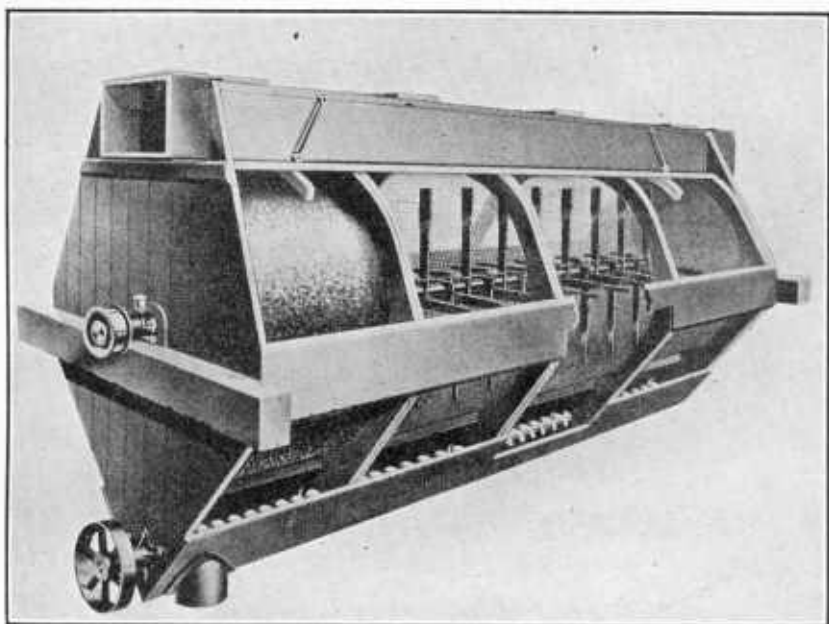
GIN SAWS AND RIBS.

Gin saws may be either 10 or 12 inches in diameter. Ten-inch saws have been in use for a long time, while the 12-inch saw has recently begun to gain in popularity.

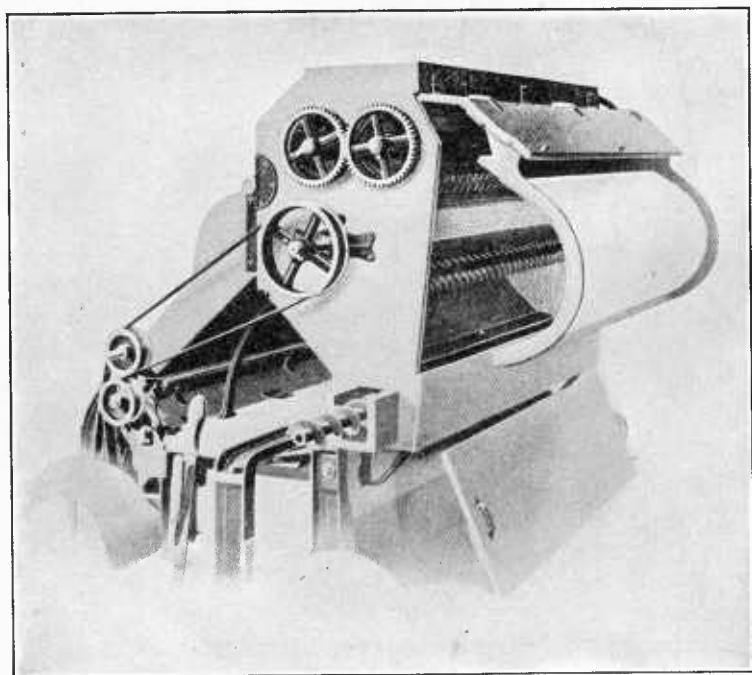
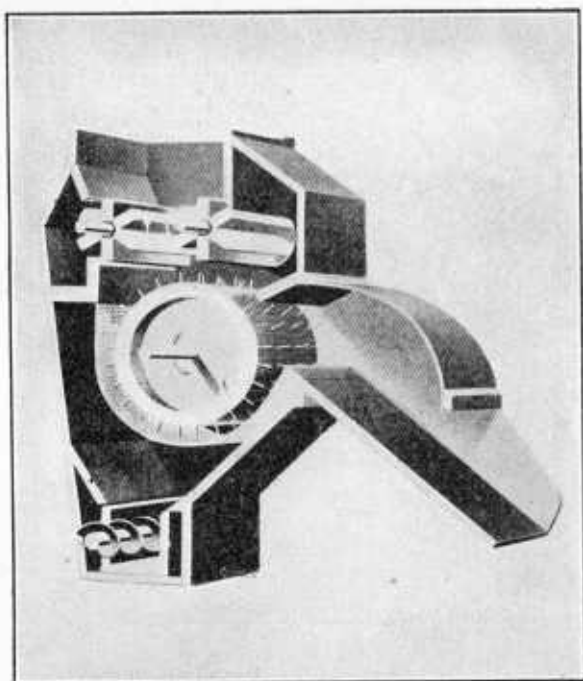
The designs of the ribs of gins are different for plain, single-rib huller and double-rib huller breasts. Huller breasts have been used more commonly in those sections in which cotton is "gathered" rather than "picked." When cotton is "gathered," bolls, leaf, and trash are mixed with the seed cotton. A huller breast is required to eliminate these bolls, which otherwise would be broken up and remain in the lint. Even in those sections where cotton is picked clean, the opinion is becoming prevalent that a huller breast is a good investment, as years in which the rotting of the bolls causes cotton of lower quality than usual come at uncertain intervals to every section and in such years a huller breast is needed.

A COMPARISON OF 10 AND 12 INCH SAWS.

The use of 12-inch saws on plain gins is comparatively new, although they have been used for years on huller gins. The cutting edge of a 12-inch saw is 6.28 inches, or 20 per cent greater than that of a 10-inch saw; the strength of the saw is not appreciably impaired by giving it this greater diameter. The life of a 12-inch saw is longer than that of the 10-inch, as it will gin the same number of bales with less use of each tooth and, therefore, will not have to be sharpened so often. Sharpening a gin saw not only wears down the cutting surface but is an expensive operation, inasmuch as it takes time in the ginning season when all the saw cylinders should be at work. With some outfits, however, an extra saw cylinder is kept, which is interchangeable, and should always be sharp and ready to take the place of some cylinder that may need replacing.



FIGS. 8 and 8A.—Two views showing a separate cleaner.



FIGS. 9 and 10.—Two views showing working parts of one style of cleaner feeder.

In this case the only expense to the ginner is the time taken in changing cylinders and sharpening the saws. The sharpening of saws at intervals during the ginning season is necessary, otherwise they will become so dull as to interfere with the thoroughness of their work. When a saw is sharpened, the throat as well as the point of the tooth acquires a very rough, jagged edge, which damages the fiber of the cotton until it is worn smooth. This smoothness is not obtained until several bales have been ginned. Therefore, any method or device which will reduce the necessity for sharpening a saw tooth will reduce to that extent the damage from this cause.

The question as to the speed at which gin saws should be operated is often discussed. For ginning cottons up to and including $1\frac{1}{16}$ inches in length of staple, under average conditions, a speed of about 400 revolutions per minute for 10-inch saws and 333 for 12-inch saws is recommended. The capacities of gins equipped with saws of these two diameters are approximately equal at these speeds. The surface speed of the saw tooth as it passes through the seed roll determines not only the capacity of the gin but the condition of the ginned fiber. The entire American crop of cotton of approximately 15,000,000 bales has to be ginned within practically four months. Some gins are operated day and night at their full capacity. Often gins are "speeded up" in an effort to gain time, but the unfortunate result of speeding is to cut the fiber of the cotton to an extent which costs the producers a great amount of money each year.

While the undue speeding of gins is discouraged, because of the injury to the fiber, it is realized that a large amount of education will be necessary to overcome the practice. Speeding of gin machinery is not a good economic principle from a ginner's standpoint. When a piece of machinery is run at a greater speed than was intended by the manufacturer, parts break, boxes run hot, belts slip, and any number of other accidents may happen which, through delays for repairs, will more than offset any advantage gained by a greater speed. The use of 12-inch saws and a reduction in speeds should result in a general improvement in the mechanical operation of the whole ginning plant.

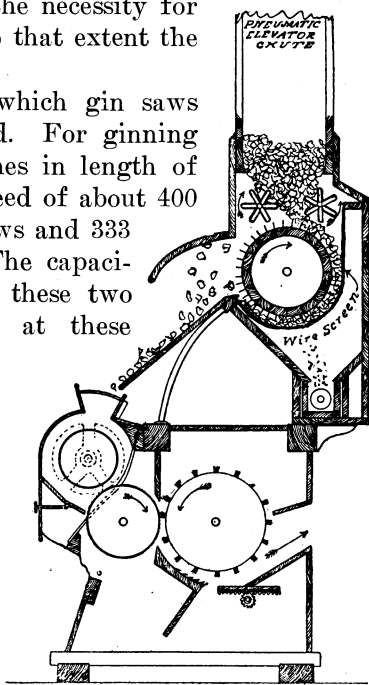


FIG. 11.—Cross section, showing one style of cleaner feeder.

With the saw shafts running at the same speed, the gin equipped with 12-inch saws will have 20 per cent advantage in capacity over the same gin equipped with 10-inch saws. It is seen that this advantage is obtained with no excessive speed of any part of the machinery, with very little extra burden on engine and belts, and with no appreciable increase of running expenses. Under no circumstances, however, should a ginner work an injury to his customer and to the cotton trade in general by sacrificing the value of the fiber of the cotton in an effort to increase the capacity of his gin. These

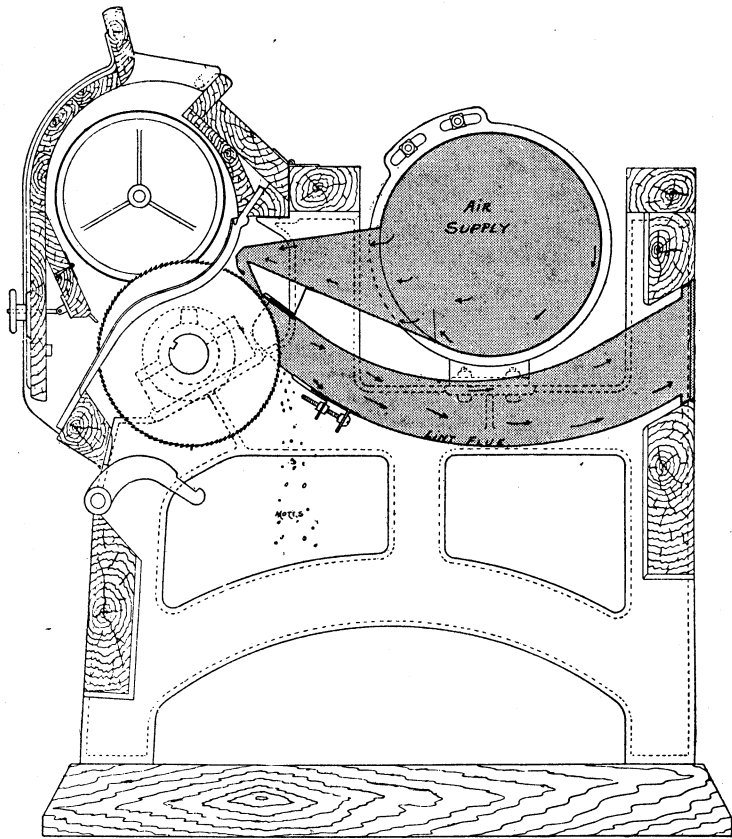


FIG. 12.—Air-blast method of removing lint cotton from gin saw.

suggestions are offered because it is realized that every reasonable method should be used for increasing capacities without damaging the fiber and that greater speeds are permissible under extraordinary conditions such as might exist following a long, dry summer or open autumn.

AIR-BLAST AND BRUSH GINS.

The lint is removed from the saws by two methods, the air blast and the brush. The air blast is a comparatively new departure in gin manufacturing. The essential difference between the two types of

gins is in the method of taking the cotton lint from the teeth of the saws. It has been claimed by some operators of the air-blast system that, in effect, the same principle is used by both methods, the mechanical construction being entirely different. In the air-blast method a fan is used to force a steady stream of air through an opening above the gin saws, directly past these saws into the lint flues, the stream of air having the same general effect as a brush. (See fig. 12.) The brush operates at a surface speed of about three times that of the saw tooth. Some contend that the speed of the brush bends the bristles back so that they just miss the gin saws;

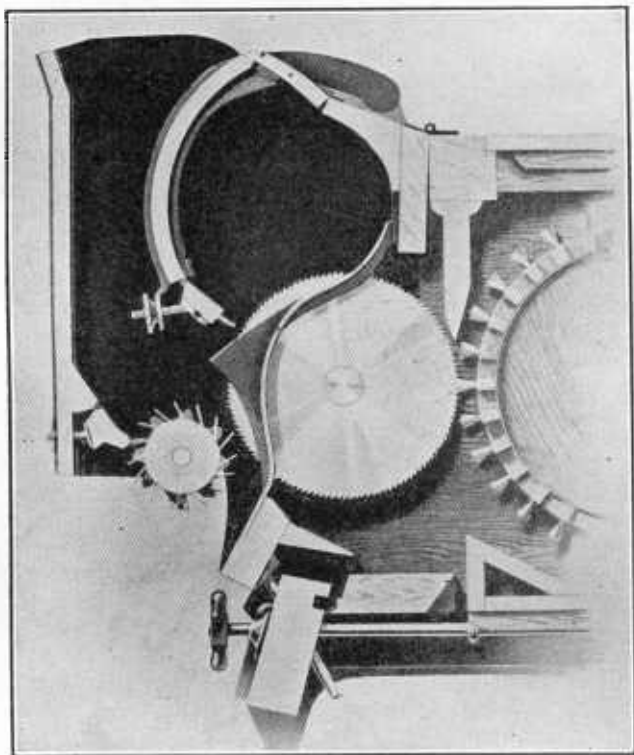


FIG. 13.—Brush method of removing lint cotton from gin saws.
Note brush placed in contact with gin saw.

others maintain that the bristles touch the saws and exert both an air pressure and an actual contact which takes the cotton away. (See fig. 13.) At all events, the results of the two systems are practically the same, and experts differ as to which is the better method.

PRESSES.

There are three methods of baling cotton—the screw press, the steam press, and the hydraulic press. The screw press is the one most frequently used, as it does the work well and is cheaper to install

than either of the other two. It is very slow, but is fast enough to take care of the cotton turned out by as many as five gins in one battery, as it is possible to "press and tie" a bale when the screw press is used as quickly as the following bale is ginned. However, it would seem that the saving of time by a quicker method would be profitable by saving a considerable part of one attendant's time. The steam press is very quick, and if it were not for the enormous amount of steam consumed and consequent extra cost, it would be an ideal press. It is the most expensive kind to operate, and requires a larger initial investment. The hydraulic press is the most powerful of all, and while requiring a hydraulic pump to operate, the consumption of power is not great, and a burden is removed from the engine as compared with the screw press. While it is not so quick as the steam press, it is desirable from other points of view.

GIN COMPRESSES.

The mechanical construction of a gin compress is in principle simply a very heavy reproduction of the ordinary hydraulic press. This form of compress is capable of producing a density equal to that of a railroad compress, and has been advocated especially for those cooperative organizations of farmers which bale their cotton for direct marketing, shipments being made direct to the domestic mills or for export, eliminating thereby the extra freight, compression, and handling charges accruing on the common flat bale.

It is the usual custom to compress cotton at concentration points, where the bale is "patched"; that is, extra pieces of bagging are put on, ostensibly to cover sample holes, but really to add weight. On arrival at the compress a bale of cotton usually does not have the full amount of "tare" (weight of bagging and ties) permitted by the practices of the cotton trade, and this fact is considered in determining the price. The patches are of sufficient weight to bring the tare up to the maximum limit. Heavier bagging might be used at the gin, and the extra weight thus gained would benefit the producer. A more economical way, however, would be to reduce the limit of tare to approximately 25 pounds per bale, and then a better price, based on the actual weight, might be obtained by producers.

Cotton that is compressed at the gin requires less material for covering, and the bale is wrapped completely, thus preventing some waste which occurs from flat bales; it is also more fully protected from the ravages of weather and fire. Bales compressed at the gin arrive at their destination in better condition than do other compressed bales, as more care is taken in wrapping and tying them. Owing to the enormous amount of cotton which it is necessary to handle in a short period of time at the large compresses, the bales are compressed very rapidly. The natural result is that some of the bands are tied shorter than others. When the pressure is relieved from the bale it expands slightly, exerting a pressure on the shorter ties which sometimes breaks either the ties or the buckles, or the ties are improperly fastened and fall off. It is not uncommon to see a compressed bale arrive at its destination with two or sometimes three ties missing, as is shown in figure 23. Figure 22 shows gin-compressed

bales, and attention is directed to the neat and uniform package as compared with the common flat and compressed bale shown in figure 21.

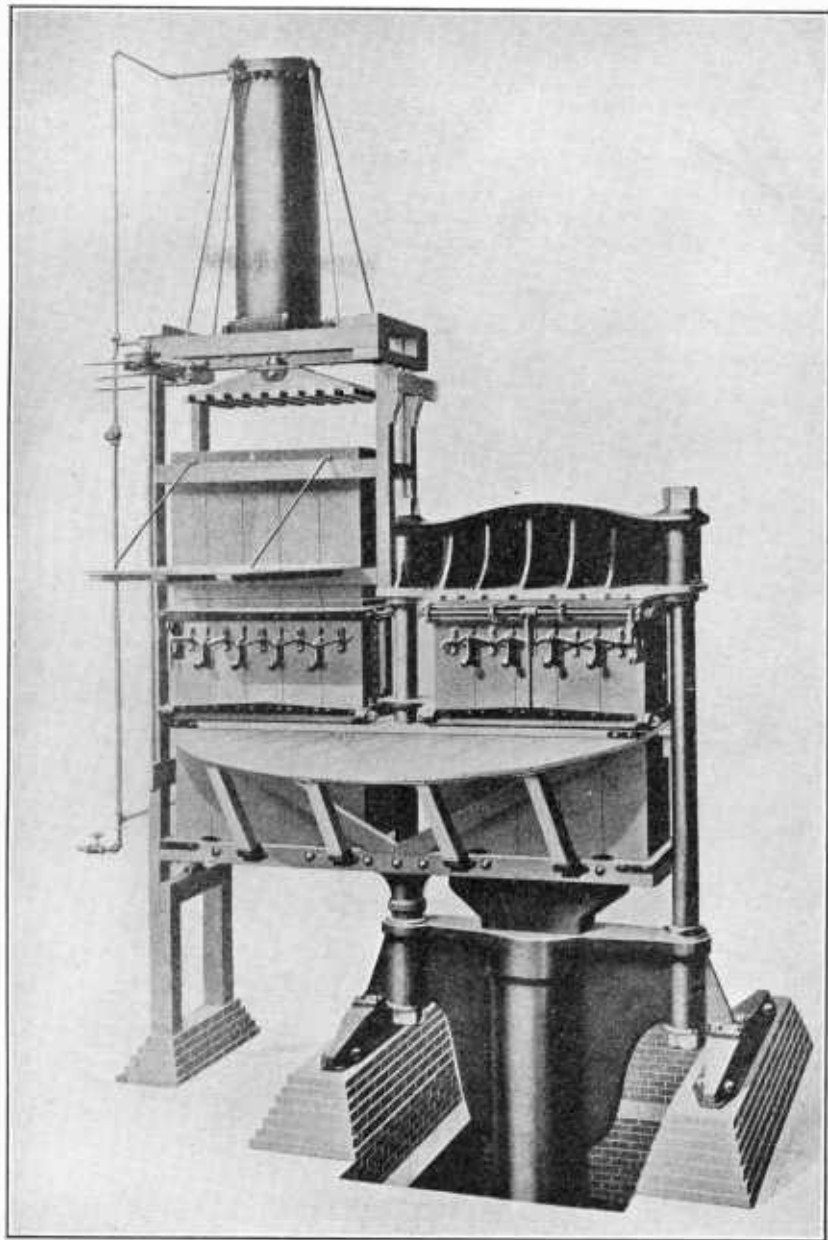


FIG. 14.—A type of gin compress.

Instead of making the bale of the regular dimensions (27 by 54 by 45 inches), a gin compress reduces the bale to approximately the

same dimensions as those of a compressed bale (27 by 54 by 23 inches). The press boxes of gin compresses vary in size between 27 by 54 and 24 by 48 inches. The standard bale is 27 by 54 inches and can be compressed to any density up to about 40 pounds per cubic foot. This standard of dimensions is prescribed by all steamship lines, bales of greater dimensions being penalized \$1 each.

It is because of these advantages that the installation of gin compresses is urged where cooperative organizations exist and where the ginning and compression of a sufficient number of bales can be controlled. A study of the advantages of gin compression is well worth the time expended by any group of farmers who have for their object the cooperative handling and marketing of cotton. Figures 14 and 15 show two different styles of gin compresses.

PLATED BALES.

One of the most costly results of overcrowded gins is the "plated" bale. The ginner, in his anxiety to crowd the capacity of his gin, fre-

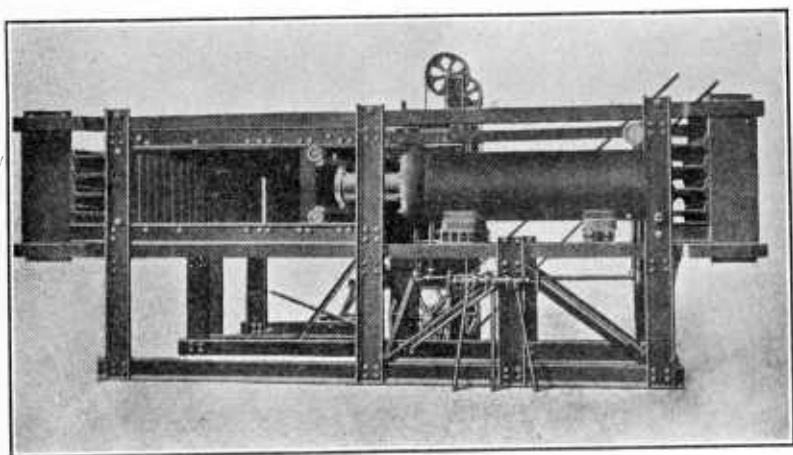


FIG. 15.—A type of gin compress.

quently does not allow a sufficient length of time for each wagonload of seed cotton to be ginned completely. He does not raise the breasts, and scarcely stops the feed long enough to judge accurately where one bale ends and a new bale begins. His estimate is sufficiently correct, as far as the actual amount of cotton is concerned, but there is a possibility that each bale will get a few pounds of lint from the preceding load, and in turn will leave a like amount of cotton for the next bale. Thus the bales are not only plated, but, as they often are not of the same grade, the better bale may be penalized down to the value of the grade found on its lower side, as the grade of a bale is usually determined by the lower side.

CARELESS PREPARATION OF THE AMERICAN BALE OF COTTON.

After cotton is ginned and baled it is often thrown into the gin yard or cotton yard, or perhaps hauled home and left exposed to the weather. The cotton sometimes becomes weather-beaten 2 or 3 inches deep on each edge. In order to ascertain the true grade, it is

necessary to cut through this plate when the bale is sold. The bands have to be loosened and the outside plates taken off, or the price per pound paid for the whole bale will be influenced by the lower value of the outside plate. In either case an unnecessary loss is sustained. The better protected the cotton has been the easier it is to

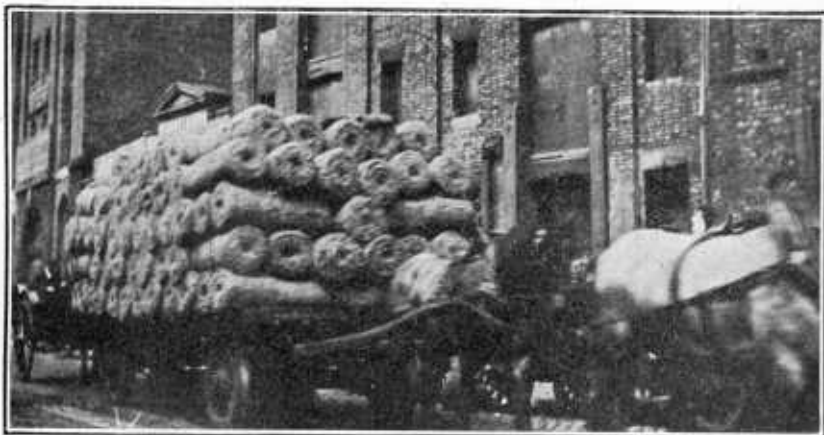


FIG. 16.—Rewoven bagging manufactured from the second-hand bagging taken from American cotton. This lot is in transit from warehouse in Manchester, England, to steamer, for shipment to Southern States, to be used again in wrapping American cotton. The use of this inferior bagging causes much waste that could be avoided by the use of better and more suitable covering.

find a market, and the higher price it should bring. Cotton which has been picked carefully and stored while dry always finds a ready market in normal times, while no one cares to buy weather-beaten or damaged cotton unless it be penalized heavily. It is a well-known fact that buyers must have a larger margin of profit on weather-beaten and damaged cotton on account of the greater risk incurred,



FIG. 17.—Cotton hauled back to the farmyard after ginning and left exposed to weather. The approximate value is \$60 per bale. This cotton may deteriorate \$5 per bale in value by becoming weather-beaten on the outside of the bale. This form of neglect is responsible for a great proportion of so-called country damage.

as they are not always able to estimate the extent to which it has been damaged and the chances to resell it quickly are not so good, as there is not always a ready market for cotton of this character.

There is no agricultural product that is so neglected as American cotton. The careless wrapping, the sampling abuses, indifferent

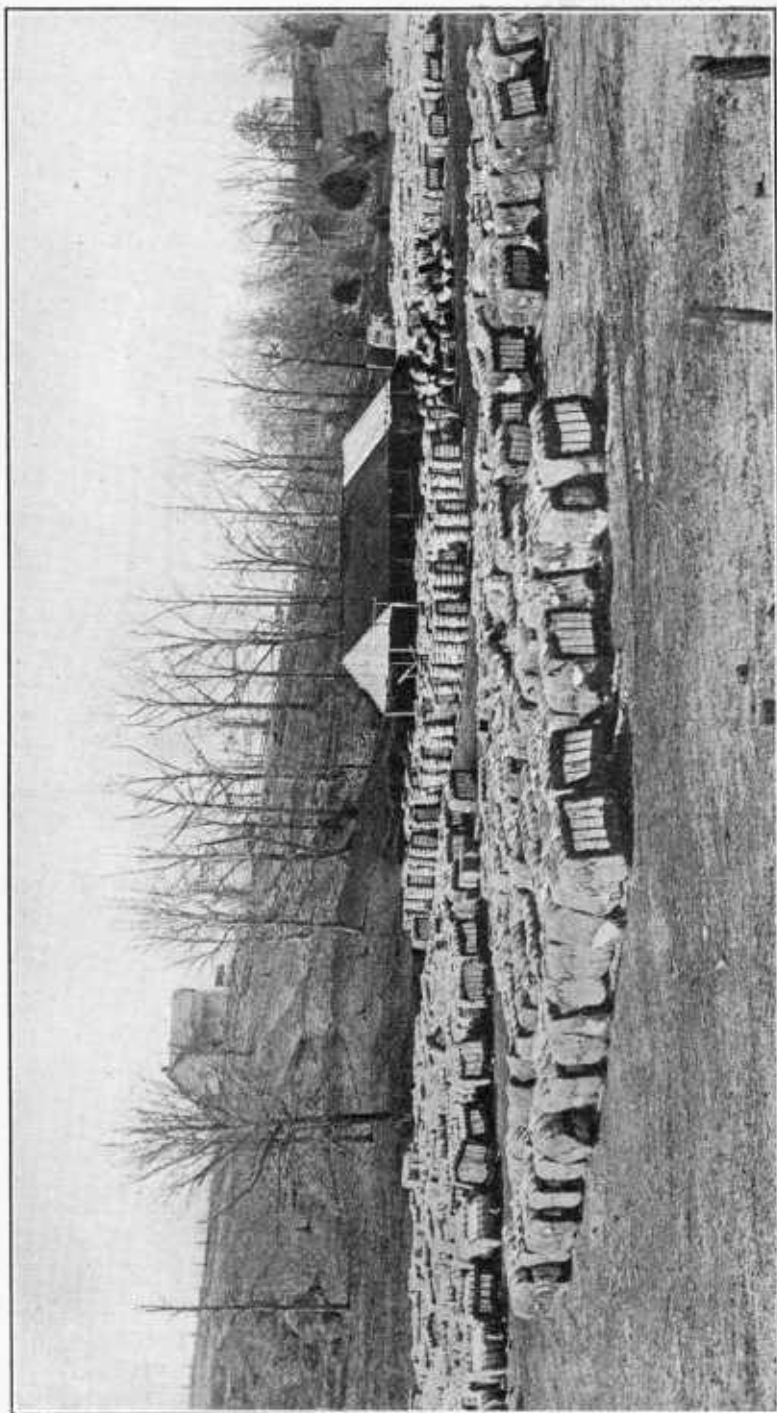


FIG. 18.—Cotton yard, showing cotton resting on wooden poles. Practically every bale in this yard would be saturated with water following a heavy rain. Often these poles become moldy and rotten, causing decomposition of the cotton and resulting in considerable damage, depending upon the length of time cotton is left in this condition. Cotton "stored" in this way is turned occasionally, thus causing the other side of the bale to deteriorate in the same way. Cotton growers suffer much loss through this method of storing.

storage, and country damage all combine to illustrate in a most striking manner the utter disregard of consequences and the careless indifference which exist in the handling and marketing of this im-



FIG. 19.—Railroad platform, showing uncompressed cotton ready for loading on freight car to be shipped to the compress.

portant and valuable crop. In no other case does a farmer care for his product from the time it is planted in the spring until it is harvested in the autumn and then expose it to all kinds of weather and abuse. A comparison of the results of the present method of

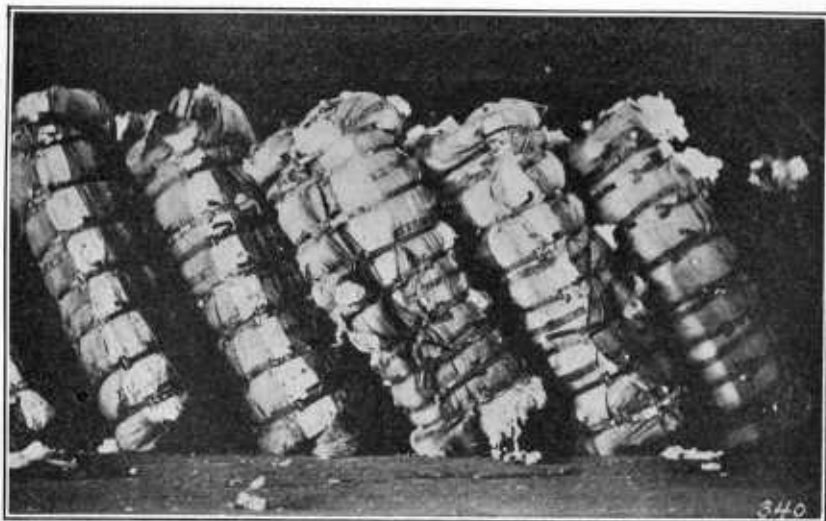


FIG. 20.—Appearance of American bales after being compressed.

handling the American cotton crop with the results obtained in the case of the Egyptian and Indian crops is best shown by figures 16 to 25, inclusive.

CONCLUSIONS.

It is apparent from the discussion of the present mechanical construction of gins that it is almost impossible to maintain the purity of each grower's seed on account of the added expense to the ginner

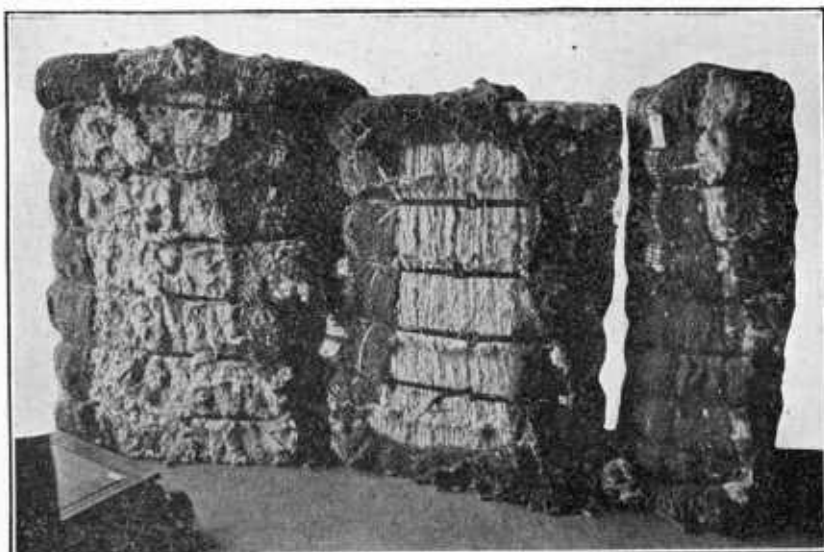


FIG. 21.—Relative sizes of American flat and compressed bales. The two bales at the left show two sizes of American flat bales. The one at the extreme left is not only a much larger bale, but longer than standard regulations. This illustrates the irregularity in the size of the American bale. The picture at the extreme right shows the American bale after it has been compressed. It is ready for shipment to domestic mill or export.



FIG. 22.—Gin-compressed bales on railroad platform ready for direct shipment to domestic mill or port. Note the neat, well-wrapped, and uniform package.

in bringing about such conditions as will insure the accurate separation of seed that is to be used for planting purposes from seed of other varieties of cotton. It is to be hoped that the gin manufacturers will develop some device which will insure a quick and accurate



FIG. 23.—Dilapidated appearance of American cotton upon arrival at Manchester, England.

rate method of keeping separate the seed ginned from each wagon-load of seed cotton.

Attention is called to the facsimile of the ginner's certificate dis-



FIG. 24.—Appearance of Indian cotton on arrival at Liverpool, England.

cussed on page 3. The use of this certificate, with its duplicate, will not only insure an accurate record of every transaction at the gin and prevent errors in transferring entries, but if the record is kept prop-

erly it will reduce materially the necessity for added office force at the gin. In the case of a small gin, it will save considerable time and bookkeeping for the manager and enable him to give more attention to other work.

The use of preparatory cleaning processes, cleaner feeders, and huller breasts is a very important factor in the better preparation of cotton for the market, especially in those sections where difficulty is experienced in getting the crop picked clean, or where bad weather prevents the proper maturing of cotton. The gin compress has many advantages, and should be especially profitable to farmers' organizations which bale their cotton for direct marketing.

With 12-inch saws, saw shafts can be operated at considerably slower speeds and still maintain the same capacity as when equipped

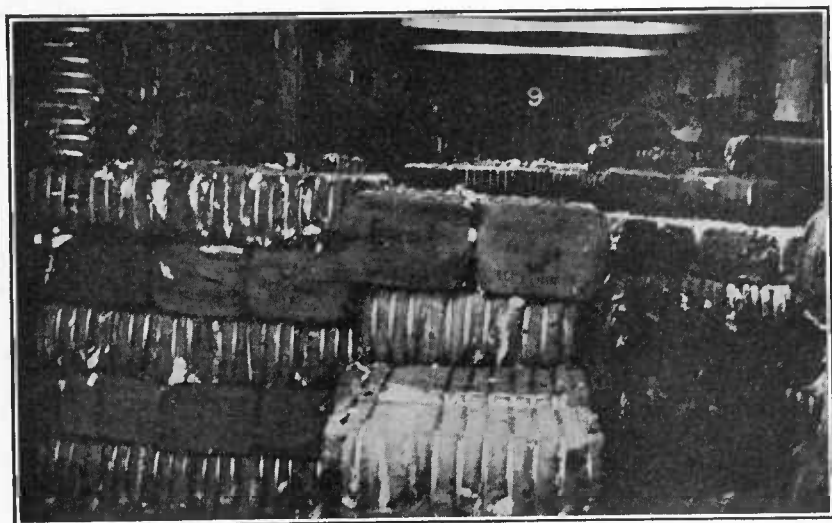


FIG. 25.—Egyptian cotton stored in warehouse at Manchester, England; capacity, 5,300 bales Egyptian cotton, average weight 750 pounds, or a total weight of 3,975,000 pounds. Capacity of these cotton safes, when stored with American cotton, is 3,500 bales, average weight 500 pounds, or a total weight of 1,750,000 pounds. If American cotton were compressed and covered in the same way as Egyptian, many thousands of dollars would be saved to the southern growers each year by reason of lower freight rates, reduced storage charges, and elimination of waste. No photograph of American cotton could be obtained at this place, as American bales are stored only when Egyptian or Indian cotton can not be obtained.

with 10-inch saws. Such equipment and lowered speed should result in an improvement in the running of the whole plant.

Attention is called to the careless preparation of the American bale of cotton and the seeming indifference to this matter on the part of the farmer, the buyer, and others handling the American bale. It is believed that it is possible to eliminate a part of the loss accruing to the farmer only by bringing to his attention the losses which occur from the time the cotton is ginned until it arrives at the mill, a large proportion of the expense of which is borne indirectly by him.

By concerted action the farmers should be able to secure better methods of ginning, maintain pure planting seed, and secure more uniform and better handling of their cotton, thus enabling them to market their crops to better advantage.